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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Long Y. Chiang

Art Unit : 1616

Serial No. : 09/840,322

Examiner : Angela Roberson

Filed : April 23, 2001

Title : TUMOR TREATMENT BY USING OLIGOANILINE

Commissioner for Patents

Washington, D.C. 20231

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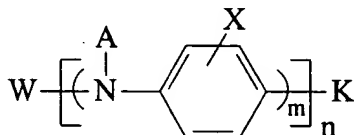
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RESPONSE TO OFFICE ACTION DATED MARCH 8, 2002

This document is filed in response to the office action dated March 8, 2002 ("Office Action").

Claims 1-21 are currently pending. They were all rejected by the Examiner only under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,202,323 to Zweig et al. ("Zweig"), in view of J. Med. Chem., 2000, 43, 4488-4498 by Leonard et al. ("Leonard") and TRIP, 1995, 3 (6), 186-190 by Nguyen et al. ("Nguyen"). Applicant respectfully traverses as follows:

Claim 1, an independent claim, will be discussed first. It covers a method of inhibiting the growth of tumor cells in a tumor site. The method includes administering to the tumor site an effective amount of an oligoaniline having formula (I):



(I)

in which m, n, A, W, X, and K are defined in claim 1.

As correctly pointed out by the Examiner, Zweig teaches using a compound of formula (II),

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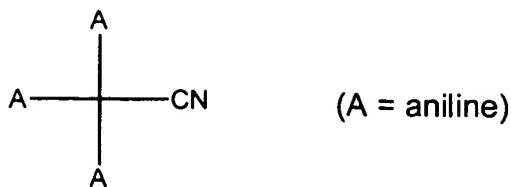
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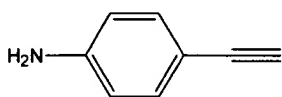
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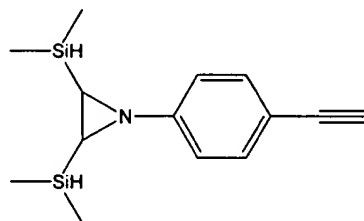
(II)

which can be activated by irradiation to yield highly reactive end products. See the Office Action, page 2, last paragraph. This aniline compound of formula (II) differs greatly in structure from the oligoanilines of formula (I). The aniline compound of formula (II) includes three aniline moieties, which are separately attached to a carbon atom. By contrast, in each oligoaniline of formula (I), all aniline moieties are linearly connected to each other to form an oligoaniline backbone. Thus, Zweig does not teach or suggest any oligoaniline of formula (I), let alone its use in inhibiting tumor cell growth, as required by claim 1.

Leonard, also as correctly pointed out by the Examiner, teaches using dyes (e.g., blue dyes) for photodynamic therapy. Examples of the dyes include 4-ethynylaniline and 4-ethynyl-N,N-[1,2-bis(dimethylsilyl)ethano]aniline, the respective structures of which are shown below:



4-ethynylaniline



4-ethynyl-N,N-[1,2-bis(dimethylsilyl)ethano]aniline

See the Office Action, page 3, first paragraph. As shown above, both of these compounds possess a $-C\equiv CH$ substituent on the benzene ring. By contrast, in the oligoanilines of formula (I), K cannot be a $-C\equiv CH$ moiety. Further, Leonard does not teach or suggest using an oligoaniline of formula (I) for photodynamic therapy.

Nguyen discloses a number of homopolymers, copolymers, and polymer blends of aniline. See, e.g., pages 188-190. These polymers are substituted with sulfonyl groups and, when dissolved in water, are electro-conductive and electrochemically active. Thus, they have

commercial applications in rechargeable batteries, light-emitting diodes, electrochromic display devices, sensors, etc. See page 186, left column. The Examiner correctly pointed out that Nguyen discloses that the aqueous solutions of these polyanilines "exhibit electroactive behavior and have an electrochemical response resembling that of the polyanilines." See the Office Action, page 3, second paragraph, second sentence. Nonetheless, Nguyen also fails to teach or suggest using an oligoaniline for inhibiting tumor cell growth in a tumor site or irradiating the polyanilines. Indeed, to the extent that Nguyen's teaching is not at all related to photodynamic therapy, Nguyen is non-analogous art and therefore not citable.

In any event, since none of Zweig, Leonard, and Nguyen teaches or suggests using an oligoaniline of formula (I) in inhibiting tumor cell growth, neither does their combination. Thus, claim 1, as well as claims 2-17 dependent therefrom, are nonobvious over Zweig, in view of Leonard and Nguyen.

Claims 18-21 cover a pharmaceutical composition containing an oligoaniline of formula (I). Like claim 1, these claims also base their patentability on use of such an oligoaniline to inhibit tumor cell growth. Thus, claims 18-21 are also nonobvious over Zweig, in view of Leonard and Nguyen.

For the reasons set forth above, Applicant submits that all claims are now in condition for allowance, an action of which is requested.

Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 6-7-02

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